

A B S T R A C T

An electromagnetic device, specifically a linear or
5 rotary single- or multi-phase motor or generator
comprising, for each phase, at least two relatively-
movable sets of teeth of soft magnetic material, one set
of teeth being associated with the stator and the other
with the rotor, the size of the device being such as to
10 enable it to generate a maximum magnetic potential U_{\max} of
at least $1.7 \times 10^{-4} J / \mu_0$ ampere turns. The width E of the
minimum air-gap between teeth of the rotor and of the
stator as measured in the direction perpendicular to the
degree of freedom is approximately equal to or greater
15 than $0.7 \mu_0 U_{\max} / J$ where μ_0 is the permeability of free
space, U_{\max} is the maximum generated magnetic potential
difference for causing the magnetic field to pass through
the air-gap E , and where J is the maximum polarization of
the soft magnetic material used for making the teeth.